

# Fertigal



## **AN IN LINE FERTIGATION CONTROL SYSTEM FOR SOIL-LESS CULTRES**

The Fertigal, designed and manufactured by GALCON,

The leading Israeli producer of agricultural computerized systems,

is a unique, compact, simple, and modular Fertigation systems for greenhouses based on direct, accurate, injection of nutrients into the irrigation water pipe by a set of Venturi type fertilizer injectors additionally, the system controls EC&PH levels and Irrigation cycles operation by one of the models of advanced GALILEO computerized controllers.

Fertigal system can be adapted to a wide range of water flow rates and pressure, typical for soil-less cultivation irrigation in greenhouses. Most GALCON models used in Fertigal system are also programmed for misting, drainage, filters, flushing and even climate control.

## Technical Specifications

### The Fertigal consists of the main following components:

An irrigation head including:

- Hydrometer – a main hydraulic valve, water meter and non-return valve, all in one unit.
- An adjustable pressure regulator.
- An electronic pressostat for low-pressure detection.
- An outlet for misting system, located before the main valve (not in all models).
- A 3/4" service valve.
- A pressure gauge with a 2 points selector.
- A plastic filter (120 mesh).
- PVC non corrosive pipes and fittings.

### Control units:

- A pair of EC&PH industrial electrodes installed in a sampling cell.
- A EC&PH monitor unit consisting of a transmitter with 4-20ma output, Galvani isolation, a large LCD display and a 4 but tons keyboard for semi-automatic calibration.
- A GALILEO controller – one of the models described on the back page.
- A main electric control panel.

### Fertilizer injectors assembly including:

- A set off 3 venturi type injectors\*

(max fert. Flow 150 lt./hr or 350 lt./hr, depends n the model) that consists also of electric fertilizer control valves, fert. Regulator and polyethylene fittings.

- More injectors are available according to customer's request.
- A water pump that maintains a pressure differential for operation of the Venturi pumps through a by-pass pipe.
- All the parts are installed on a compact stainless steel frame (140x80x120cm) that enables:
  - An easy installation of

additional components such as: more injectors, fertilizer meters, filters, Dagan system etc.

- Transporting by any standard commercial vehicle.

Different fertigal models are available, defined according to their diameter (max. flow) and model of controller. Optional diameters (flow) are 1" (9 m3/H), 2" (25 m3/H), 3" (50 m3/H) or 4" (90 m3/H).

The controllers models available are Galileo-16, Galileo-32 or Galileo 2000 (see specification on rear page)

## Galileo Controllers Operation Characteriscs

The user friendly GALILEO controller, used in the fertigal, enables direct monitoring or programming via its own keyboard or through an external PC.

Its main features are:

- Volumetric or time-based settings of irrigation cycles through up to 100 independent programs. Total NO. of valves depends on the controller's configuration (see following table). Each program operates an irrigation valve + 4 optional Co-valves.
- Proportional fertigation, including on line EC&PH control maintained by 1-8 fertilizer injectors, operated through up to 50 different fertigation programs.
- Accurate fertilizer dosing by injection of small pulses along the irrigation cycles
- Automatic injection rate adjustments

according to desired EC&PH levels.

- Stop and/or alarm output in the event of failure of water or fertilizer supply.
  - Automatic reset after termination of faulty conditions. Immediate manual suspension of operation, if needed, through the controller's keyboard with automatic or manual release.
  - Optional manual (one-time) operation of irrigation programs without changing the current programs.
  - 2 filters back-flushing programs for 2 groups with a combination of up to 10 stations.
  - 20 misting programs operated by temperature, humidity or timetable. The valves are freely activated with limitation of max. No. of valves.
  - A long existing lithium battery backs up of the controller's memory in case of power failure.
- The advanced control system offers

a great variety of additional options

- Operation of a drain-water sampling system (DAGAN) recording the drain-water ph/ec and quantity from several points in the greenhouse.
- Automatic adjustments of fertigation programs, as a feedback result of the drain-water analysis.
- Automatic start of irrigation cycles according to readings of external sensors such as solar radiation, temperature, tensiometers, start-trays etc.
- A full, advanced, climate control program is obtained through which optimal environmental conditions within greenhouse.
- Communication with a remote PC, via direct cable, telephone line, cellular phone or radio transmitter, for monitoring, programming and data logging, in conjunction with a whole network of controllers.

The total No. of available I/O's, in Galileo –2000, is determined by the selected combination of I/O cards.

In Galileo –32 the I/O number is fixed (32 out, 14 analog inputs, 8 discrete inputs) and so it is in the Galileo –16 (16 outputs, 8 analog inputs and 8 discrete inputs)

